

TITLE: SAUNA WITH PHOTOTHERAPY LIGHTING

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#### CROSS REFERENCE TO RELATED APPLICATION

5        This application claims the benefit of U.S. Utility Patent Application  
No. 09/684,685, entitled "Sauna with Phototherapy Lighting, filed October 7, 2000, which  
claims benefit of Provisional Patent Application No. 60/158,593, filed October 7, 1999,  
entitled "SUN BOX SAUNA AND LIGHT FIXTURE".

#### FIELD OF INVENTION

10       The current invention relates to the field of phototherapy lighting and saunas.  
Specifically, the current invention discloses phototherapy lighting located within a portable  
sauna, where such sauna and phototherapy lighting combination provides a therapeutic and  
aesthetic experience that approximates the rays of natural sunlight.

#### BACKGROUND OF THE INVENTION

15       Saunas have been manufactured and sold on the market for many years. Saunas can  
employ a variety of heat sources, all with the object of warming a person's body in order to  
create sweat. The sweating process has several health benefits such as increasing the heart  
rate, blood circulation, calorie consumption, and the release of toxins.

20       Phototherapy, or light therapy, is a newer science that has developed in particular in  
respects to the treatment of Seasonal Affective Disorder (SAD). Phototherapy was found to

be highly effective in the treatment for SAD, or seasonal affective disorder, as well as effective for re-tuning the biological time clock, alleviating stress and creating endorphins for mood enhancement. In addition, more recent research has indicated that light therapy addressed to the body as a whole in conjunction with heat therapy to the body increases the  
5 beneficial aspects of both.

Until this point, no one has yet addressed the need or found a way to provide full body phototherapy and heat therapy in a comfortable, pleasant and affordable manner. This invention is in response to that current need.

A search of sauna patents yield none that are concerned with phototherapy. U.S.  
10 Patent 4846145 to Katsuyoshi (1989) concerns itself with the combination of combustion heat and infrared heat to a sauna. U.S. Patent 5,628,073 to Popovich (1997) relates to a portable sauna of tubular metal and a thermal shield.

A search of phototherapy patents is a little more helpful. U.S. Patent 05562719 to Lopex-Claros (1996) indicates a method of delivering phototherapy to the eyes via a mask.  
15 U.S. Patent 05447527 to Waldman (1995) indicates a method of delivering phototherapy to the eyes via a table lamp apparatus.

No patents indicate phototherapy to the entire body as well as the eyes. Recent research indicates that the beneficial light therapy as also absorbed by the skin. U.S. Patent 5645578 by Sybaritic, Inc. (1997) makes some attempt to combine heat and phototherapy.  
20 The phototherapy is concerned however, only with the person's eyes. The person's head is covered with a stationary hood which is in turn attached with the bed frame. The bed frame is encased in a covering that delivers heat. The user will not receive the benefits of full body light therapy. In addition the user will be forced to lie still in a bed, with his head encased in

a hood while flashing lights pass in front of his eyes. The hood and bed apparatus limit the user's mobility, makes him unaware and not in control of his surroundings, deprives him of full body light therapy and makes him unable to do other activities such as reading. This type of therapy could be claustrophobic and limiting to the extent that the user would not be  
5 very eager to employ it.

### SUMMARY OF THE INVENTION

It is an object of this invention to provide the benefits of phototherapy to the entire body and the eyes.

It is also an object of this invention to create a more enjoyable experience for the use  
10 of light therapy.

Another object of this invention is to create a more enjoyable experience for the use of a sauna by alleviating the sometimes dark, cave-like atmosphere.

Yet another object of this invention is to provide a sauna that can help improve one's mood and alleviate the symptoms of Seasonal Affective Disorder (SAD).

15 A further object of this invention is to provide a sauna that can help reset one's biological clock in cases of jet lag.

It is also an object of this invention is to provide a sauna that can be used for a combination of heat and light therapy for the entire body having enhanced therapeutic properties over existing technologies.

20 A yet further object of this invention is to provide an affordable mechanism to be used at home or in institutions.

The sauna of the current invention is an constructed of natural, untreated, cedar or similar wood, with a seating bench placed at a comfortable height from the floor. The

overall size of the enclosure can vary from one person to several. The front of the enclosure has an entry door, hinged on one side, with a magnetic door closure on the other side, that does not allow locking. The door contains a window and the front of the sauna also displays a circular window as a part of its signature appearance.

5 For simplicity and quickness of assembly and storage, the two side panels are hinged to the back panel and can be folded flat. The floor, bench, the light box (describe below) and front panel are separate and attach easily with minimal tools through special clasp or clamp closures already pre-attached to the pieces. The side and back wall contain pre-assembled slots to slide the bench into.

10 The base is notched around the exterior edges for the sides, front and to fit into before being clamped down, for added stability of the unit. The top of the enclosure is comprised of a box containing a plurality of full spectrum lights that rests on the sidewalls and the back wall. The enclosure can include air vents and in one embodiment of the invention there is an air vent under the bench and another air vent near the top of the  
15 enclosure.

Preferred embodiments of the invention contain infrared heating units, full spectrum lighting and audio systems. The electronic components of the invention are powered by standard household current and the saunas of the current invention can simply be plugged into a standard wall socket.

20 The infrared radiant heaters are positioned strategically in the walls of the enclosure to provide evenly distributed infrared heating rays onto a person sitting inside the enclosure. The light box contains a plurality of full spectrum incandescent or florescent neodymium or similar light sources. The light box is specially designed to direct rays in a parallel

formation, thus providing a light source similar to the characteristics of the sun's light, without the harmful UV rays. At least one preferred embodiment of the invention can also include the full spectrum lights placed on the walls in addition to the light box, so that a user of the sauna is surrounded in a light bath.

5           The sheltered area beneath the bench is cooler and suitable for placement of a sound system or speakers. In some embodiments of the current invention, aromatherapy devices may be enclosed in area beneath the bench or on one of the interior walls of the unit.

          A control panel for the heating elements, the sound system, and the intensity of the lights, as well as for the corresponding times, is conveniently located both outside and inside  
10   the unit. The infrared heating elements are thermostatically controlled to provide a pre-determined comfortable range of heating intensity. The thermostatic controls can be set manually for a comfortable temperature.

          At least one embodiment of the current invention includes a built in timer as well that can be set and will turn off the heat after the desired time. The neodymium light box is  
15   controlled by a variable resistance dimmer switch specially designed to increase intensity of the lights from low to high automatically in a gradual manner over a period of approximately 5 – 10 minutes or longer thus duplicating the sensation of a sunrise. The light controls also have a timer that can be set to turn off the lights either gradually or instantaneously at a desired time.

20           The current invention meets the objects stated above by providing a portable sauna having infrared heat and full spectrum light capabilities. The enhanced combination further saves time for the users as light and heat therapy can be used together; saves space as only one unit is required and thus saves on cost as well. The user can experience the benefits of

light and heat therapy while engaging in other activities such as reading, listening to music, or even watching pictures or entertainment on a mounted screen. For total relaxation the user can bask in the warmth and light that resembles being outside on a sunny day.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

5        FIG. 1 shows a box containing the phototherapy unit that comprises the top of the sauna.

FIG. 2 shows the exterior view of the sauna from the front and side.

FIG. 3 shows a cross section of the phototherapy light box.

FIG. 4 shows the ceiling view of the phototherapy light box from inside the sauna

10        FIG. 5 shows the front view of the phototherapy light box.

FIG. 6 shows an exploded view of the sauna, exhibiting some of the outside and interior features.

FIG. 7 shows the wiring diagram for the phototherapy light box.

FIG. 8 shows the wiring diagram for the heating elements.

15        FIG. 9 shows cross section displaying interior sidewall of the sauna.

FIG. 10 shows the wiring diagram for the ultraviolet lighting.

FIG. 11 is a cross sectional side view of a light receptacle in the light box, illustrating the use of mirrors for directing the rays of full spectrum lights from the light box.

20        FIG. 12 is a view, seen from below, of a light receptacle having rings of mirrors for directing light rays, as.

#### DETAILED DESCRIPTION

Turning now to the drawings, the invention will be described in preferred

embodiments by reference to the numerals of the drawing figures wherein like numbers indicate like parts. One preferred embodiment of this invention is illustrated in FIG. 1 and FIG. 6, the exterior surface 33 and the interior surface 18 of the sauna are constructed of wood, preferable cedar. The door 38 contains a window 11 and connection hinges 37 and a  
5 door handle 34 with a magnetic closure.

The sides of the sauna are connected by pre-attached clamps 32 and screw assemblies 31. The top of the sauna, consisting of the phototherapy light box contains a wood strip 35 at its base, which overlaps the top of the unit and is held on by gravity. The interior bench 27 is held up by its connection to the back wall and the vertical panel 26.  
10 FIG. 2 and FIG. 6 also show the exterior placement for the control panel 39.

FIGS. 3, 4, and 5 show the physical structure of the phototherapy light box, which fastens to the top of the sauna unit. It is comprised sides 33, a vented top, and a lower panel 13 with a plurality of circular holes to direct light into the sauna. Each hole contains a light element 12. The entire box is built slightly larger than the dimensions of the sauna, so that  
15 the overhanging lip 35 of the box fits over and attaches to the top of the sauna.

The recessed light canister assembly 36 is shown from the side and the top. The full spectrum light bulb 12 is shown located inside of the housing. The interior ceiling surface of the phototherapy light box 13 is constructed of wood, preferably cedar to match the rest of the interior of the sauna. An inlet power box and relay housing 28 is located behind the  
20 ceiling surface 13. The panel of the light box contains ventilation holes to allow adequate heat dissipation.

FIG. 7 shows the wiring 25 of the light bulbs 12 to the grounding rod 21, the rheostat 20, and the timer switch 19. The number of bulbs will vary base on the overall size of the

sauna. While not depicted, the timer can be used in conjunction with variable resistance dimmer to increase intensity of the lighting in a slow and gradual manner to recreate a feeling of a sunrise and allow a comforting adjustment of the eyes to the light. Manual settings of intensity are also possible. In addition the timer can be set to gradually diminish  
5 and turn off the lights or turn them off all at once, at a predetermined time.

FIG. 6 shows the manner in which the sauna can be disassembled. In addition, the placement of the heating units 15 as well as the speakers 16 is shown. FIG. 8 shows the wiring 25 of the heating units to the grounding rod 21, the relay 24, the thermostat control 23, the timer switch 19, and the fuse 22.

10 FIG. 9 shows an embodiment of a sauna according to the current invention that has a screen for moving pictures 30, magnets 42 in the floor and a UV bulb 40 mounted on the wall. A footing block 29 is displayed beneath the sauna. While not depicted in the figures, at least one embodiment of the current invention has full spectrum neodymium or similar lights in the walls of the sauna to provide a user with a total light bath. FIG. 10 shows the  
15 wiring 25 connecting the ultraviolet lights 40 to the switch 41 and the timer 19.

FIGS. 11 and 12 depict an embodiment of light canister that can be used in various preferred embodiments of the current invention. The canisters 36 contain rings of mirrors 51, 52, & 53 that are positioned and angled to capture and redirect the angular light rays into parallel beams 60 before they leave the canister 36 and enter the sauna. This reduces glare and  
20 discomfort to the eyes and more closely duplicates the characteristics of sunlight.

Fig. 12 shows the inside of the light canister. The bulb 12 is surrounded by concentric and angled rings of mirrors. There are three sets of concentric mirror rings. Mirror ring one 51 and mirror ring two 52 are mounted to the walls of the canister 36, and



mirror ring three 53 is attached to the canister via holding bars 54. Holding bars 54 are painted black and attached to the walls of the canister. In this embodiment, the walls of the canister are also painted black.

After the sauna of the current invention is assembled, it is powered by simply plugging it into a wall socket having standard household current. The user then sets the exterior controls on the control panel 39 for the intensity and duration of the lights, heat, and other amenities such as music, which the user intends to employ. The user can then enter through the door and remain within the sauna any amount of time that the user feels is comfortable and beneficial. The user may use any one feature of the sauna, such as heat, alone or in conjunction with any other feature of the unit. All controlled features have independent controls.

With this phototherapy sauna, the user is in control of the interior environment to his or her own comfort level. Other enjoyable amenities are also possible to add on such as magnetic therapy, tanning lamps, a music system, a video system with an interior screen, aromatherapy, a humidifier, or a fresh air fan. The user could imitate a day at the beach, with a fresh breeze blowing. There are many possibilities for physical and mental enjoyment of the phototherapy sauna. After use of the sauna is completed, the sauna can be disassembled and stored out of the way, or it can be left in its assembled condition.

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#### INDUSTRIAL APPLICABILITY

The invention has applicability to the field of phototherapy and saunas; in particular, this invention describes the only currently available method for delivering combined full body phototherapy and heat benefits in an economic, comfortable and aesthetically pleasing

environment. Further, the combined phototherapy and heat benefits may be employed in combination or alone such that the user may enjoy a simple phototherapy session without the added heat, or may employ the heat alone if it is near bedtime and the stimulus of the lights is not desired. The phototherapy sauna of the current invention can be used by  
5 individuals or groups of people at a private residence for therapeutic reasons or for recreational or relaxation purposes. The invention disclosed herein can also be used by medical institutions and private health practitioners for medical and therapeutic purposes.

In compliance with the statute, the invention has been described in language more or less specific as to structural features. It is to be understood, however, that the invention is  
10 not limited to the specific features shown or described, since the means and construction shown or described comprise preferred forms of putting the invention into effect.

Additionally, while this invention is described in terms of being used for providing heat therapy and photo therapy, it will be readily apparent to those skilled in the art that the invention can be adapted to other uses as well. The invention is, therefore, claimed in any of  
15 its forms or modifications within the legitimate and valid scope of the appended claims, appropriately interpreted in accordance with the doctrine of equivalents.